REMARKS/ARGUMENTS

Reconsideration in view of the remarks herein is respectfully requested.

Status of the Claims

Claims 1-81 are pending in this application. Claims 14-81 have been withdrawn from examination by the Examiner.

Discussion of the Amendments to the Claims

By this Amendment, claims 4, 5, and 11-13 are amended. Support for the amendments to the claims may be found, for example, in the original claims. No new matter is added.

In view of the foregoing amendments and following remarks, reconsideration and allowance are respectfully requested.

I. Objection to the Specification

The Office Action objects to the specification for failing to comply with the requirements of 37 CFR 1.821-1.825. In particular, the Office Action objects to the instant specification because allegedly, the sequences set forth in the specification and drawings lack sequence identifiers. The Examiner recommends amending the Brief Description of the Drawings to provide sequence identifiers.

By this Amendment, Applicants amend the "Brief Description of the Drawings" in order to provide sequence identifiers, with particular attention to the Examiner's comments. No new matter is added. Accordingly, reconsideration and withdrawal of the objection are respectfully requested.

II. Rejection under 35 U.S.C. §112, First Paragraph

A. Written Description

The Office Action rejects claims 3-13 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement.

In particular, the Office Action alleges that: "while the specification has adequate written description of the bacterial RNAP RNA exit channel, there is no disclosure on structural limitations of the genus represented by the derivatives of RNAP RNA-exit channel and the genus represented by eukaryotic RNAP." *See* Office Action page 4.

Additionally, the Office Action asserts that there is allegedly no disclosure of the activity of the derivatives, a method to analyze the activity of the derivatives, and allegedly no description for the identifying characteristics for recognizing that an agent will inhibit the activity of the derivatives. The Office Action concludes by stating that "one skilled in the art would conclude that the disclosure of intact RNAP RNA-exit-channel or eukaryotic RNAP is not representative of the undefined genus of derivatives and fragments recited in the claims." Applicants respectfully disagree and traverse the rejection.

The written description requirement of 35 USC 112, first paragraph, is fulfilled when the patent specification described the claimed invention in sufficient detail such that the claim limitations are described so that one skilled in the art would recognize that the applicants had invented the subject matter. *See Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991), *In re Herschler*, 591 F.2d 693, 700 (CCPA 1979).

Applicant's respectfully disagree with the Office Action's assertion that there "needs to be a structural/functional nexus that allows the skilled artisan to reasonably envisage those molecules that are currently being claimed." A structural/functional nexus is only **one** of the options available to sufficiently show that the applicant was in possession of the claimed genus. MPEP §2163 provides that the written description requirement for a claimed genus may be satisfied through sufficient description of a representative number of species by disclosure of relevant identifying characteristics, i.e., structure or other physical and/or chemical properties, by functional characteristics coupled with a known or disclosed correlation between function

and structure, or by a combination of such identifying characteristics, sufficient to show that the applicant was in possession of the claimed genus.

The present invention is directed to methods for identifying agents that bind to a bacterial RNA polymerase through interactions with a bacterial RNAP homologous bacterial RNAP RNA-exit-channel amino-acid sequence, i.e., the target region.

In one embodiment, the present invention is directed to comparing the binding of a compound to a "first entity" that contains the target (test entity) and to a "second entity" that contains an altered target (control entity). This comparison clearly, unambiguously, enables specific identification of compounds that function through interactions with the target.

At the time of the present invention, as disclosed in the specification, the Applicants were clearly in possession of the invention as applied to intact RNAP, to fragments of bacterial RNAP that include the target a homologous bacterial RNAP RNA-exit-channel amino-acid sequence, and to derivatives of RNAP suitable for use as "second identities" (control entities).

The Office Action alleges that "there is no disclosure on structural limitations of the genus represented by the derivatives of RNAP RNA-exit channel and the genus represented by eukaryotic RNAP." *See* Office Action page 4. The Office Action further alleges that there is no disclosure of the activity of the derivatives, no disclosure of a method to analyze the activity of the derivatives, and no description of the identifying characteristics for recognizing that an agent will inhibit the activity of the derivative. The Office Action further alleges that "one skilled in the art would conclude that the disclosure of intact RNAP RNA-exit-channel or eukaryotic RNAP is not representative of the undefined genus of derivatives and fragments recited in the claims." The Office Action asserts that "in the absence of sufficient recitation of distinguishing identifying characteristics, the specification does not provide adequate written description of the claimed genus. The Office Action concludes by asserting that "the inventor, at the time of filing of at the application, was not in possession of the broad genus comprising derivatives of bacterial RNAP, derivative of bacterial RNAP homologous RNA-exit-channel, or derivatives of eukaryotic RNAP, or fragments thereof." See Office Action page 4. Applicants respectfully disagree.

Without conceding the propriety of the rejections, claims 4, 5, and 11-13 are amended to more clearly recite various novel features of the claimed invention, with particular attention to the Examiner's comments. Specifically, each of claims 4, 5, and 11-13, is amended to eliminate references to "derivative." This obviates the rejection.

Applicants respectfully note that all remaining references to "derivative" in the claims refer unambiguously to the specific set of derivatives that are suitable for use as "second entities" (control entities) to enable specific identification of compounds that function through interactions with the instant target.

Said derivatives are defined throughout the instant specification. In particular, said derivatives suitable for use as "second entities" are defined as "a derivative of RNAP from a bacterial species that has at least one amino acid substitution, deletion, or insertion, in a bacterial RNAP homologous RNA-exit-channel amino-acid sequence." Furthermore, the specification teaches that "The bacterial RNAP, or bacterial RNAP derivative, can be isolated from bacteria, produced by recombinant methods, or produced through in vitro protein synthesis." *See* specification, paragraph [0057].

Furthermore, in the instant specification, in the Examples, seventeen illustrative instances of said derivatives disclosed and are shown experimentally to enable specific identification of compounds that function through interactions with the instant target (three derivatives in Example 1, Table 1; fourteen derivatives in Example 2, Table 2).

Accordingly, based on the guidance provided in the specification (the definition, the teaching, and the seventeen illustrative instances) and knowledge of the art, it is clear that one of ordinary skill in the art could easily select a derivative suitable for use as a "second entity" (control entity) in order to practice the claimed method.

Thus, it is respectfully submitted that at of the time of the invention, Applicants were clearly in possession of the invention as applied to intact RNAP, to fragments of RNAP that include the target homologous RNA-exit-channel amino-acid sequence, and to derivatives suitable for use as "second entities." Thus, claims 3-13, possess written description, and reconsideration and withdrawal of the rejection is respectfully requested.

III. Rejection Under 35 U.S.C. §102

The Office Action rejects claims 1, 2, and 4-10 under 35 U.S.C. §102(b) as being anticipated by Campbell et al., Cell, vol. 104, pp. 901-912, (2001), ("Campbell"). Applicants respectfully traverse the rejection.

Independent claim 1 is directed to "(a) preparing a reaction solution including the agent to be tested and a first entity including a bacterial RNAP homologous RNA-exit-channel amino-acid sequence; and (b) detecting at least one of the presence, extent, concentration-dependence, or kinetics of binding of the agent to the homologous bacterial RNAP RNA-exit-channel amino-acid sequence. (Emphasis added) Campbell fails to teach or suggest such features.

It is well settled that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *See* MPEP §2131.

The examiner asserts that Campbell discloses a method for identification of compounds that interact with the instant target. In support of this assertion, the examiner notes that Campbell demonstrates binding of rifampicin to RNAP and further asserts that Campbell teaches that "rifampicin binds to...the exit channel." *See* Office Action, page 5.

Applicants respectfully submit that the examiner's assertion reflects confusion between previously used nomenclature and currently used nomenclature for structural elements of RNAP. At the time that Campbell was published, the term "RNA exit channel" was used for both: (1) the region of RNAP that interacts with the RNA-DNA hybrid (the region of RNAP

that contains the binding site for rifampicin), and (2) the region of RNAP that interacts with single-stranded RNA (the region of RNAP that contains the instant target). However, currently, the term "hybrid binding site" is used for the first region (the region that contains the binding site for rifampicin), and the term "RNA exit channel" is used for the second region (the region that contains the instant target).

Campbell teaches that rifampicin binds to the region of RNAP that interacts with the RNA-DNA hybrid (the region currently termed the "hybrid binding site"). Specifically, Campbell teaches that the rifampicin binding site comprises, at most, residues corresponding to, and alignable with, residues 143-148, 505-537, 562-575, and 684-690 of the beta subunit of RNAP from Escherichia coli. *See* Campbell, Figure 1.

In contrast, the claimed invention involves a different region of RNAP (the region currently termed the "RNA exit channel"). The instant target is defined in the specification as "a region within the bacterial RNAP RNA-exit-channel comprising residues corresponding to, and alignable with, 1251, 1256, and 1321 of the beta subunit of RNAP from Escherichia coli and residues 248-249 of the beta' subunit of RNAP from Escherichia coli (the 'homologous RNA-exit-channel amino-acid sequence' or 'target'; Figure 1)." See specification, paragraph [0024].

The binding site disclosed by Campbell--the binding site for rifampicin--has absolutely no overlap with the instant target. Indeed, the binding site for rifampicin is distant from--more than 2 nm from--the instant target within the structure of RNAP.

Therefore, Campbell nowhere teaches or suggests a method for identification of compounds that interact with the instant target, as claimed.

Accordingly, Campbell does not anticipate independent claim 1. Claims 3-13 variously depend from claim 1 and, thus, also are not anticipated by Campbell. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

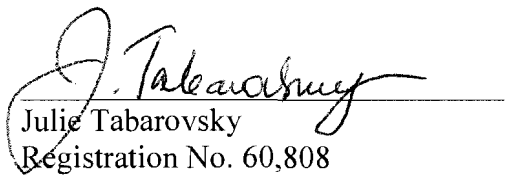
IV. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are earnestly solicited.

No fees are believed to be due with regard to this communication. The Commissioner, however, is hereby authorized to charge payment of any fees associated with this communication, or credit any overpayment, to Deposit Account No. 08-2461. Such authorization includes authorization to charge fees for extensions of time, if any, under 37 C.F.R. §1.17 and also should be treated as a constructive petition for an extension of time in this reply or any future reply pursuant to 37 C.F.R. §1.136.

Should the Examiner have any questions concerning this response, the Examiner is respectfully invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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